

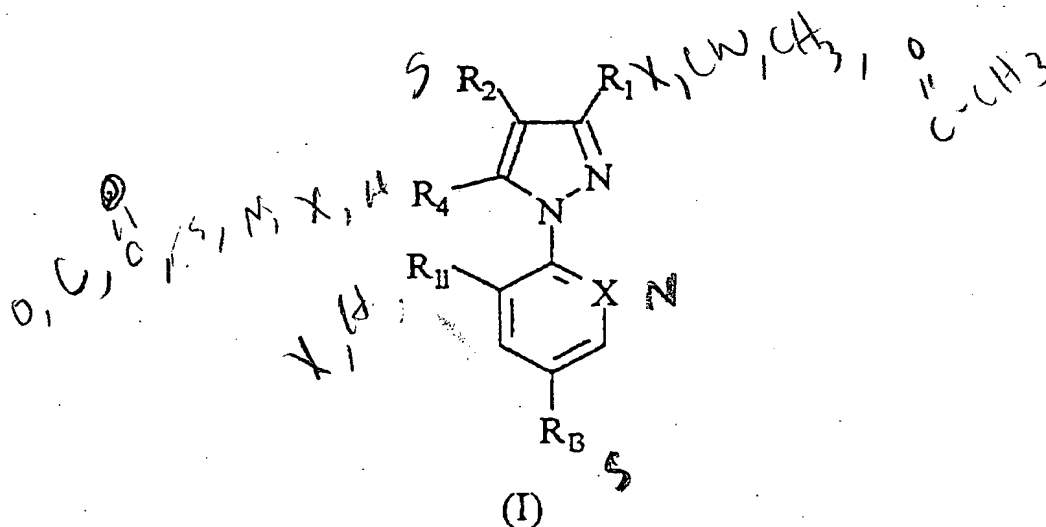
WO 01/17354

PCT/FR00/02460

What is claimed is:

17
CLAIMS

1. Insecticidal compositions comprising:
 - a) between 0.001 and 5%, preferably between 0.05 and 1% and still more advantageously between 0.05 and 0.5% of a compound of formula (I):



in which:

- 10 R_1 is a halogen atom or a CN group or a methyl group or a CH_3CO group;
- R_2 is $\text{S(O)}_n\text{R}_3$;
- R_3 is alkyl or haloalkyl;
- R_4 represents a hydrogen or halogen atom, or
- 15 an NR_5R_6 , $\text{S(O)}_m\text{R}_7$, $\text{C(O)}\text{R}_7$ or $\text{C(O)}\text{O}-\text{R}_7$, alkyl, haloalkyl or OR_8 radical or an $-\text{N}=\text{C}(\text{R}_9)(\text{R}_{10})$ radical;
- R_5 and R_6 independently represent a hydrogen atom or an alkyl, haloalkyl, $\text{C(O)}\text{alkyl}$ or $\text{S(O)}_r\text{CF}_3$ radical, or R_5 and R_6 can together form a divalent
- 20 alkylene radical which may be interrupted by one or two

✓ divalent heteroatoms such as oxygen or sulphur;

R₇ represents an alkyl or haloalkyl radical;

R₈ represents an alkyl or haloalkyl radical or a hydrogen atom;

5 R₉ represents an alkyl radical or a hydrogen atom;

R₁₀ represents a phenyl or heteroaryl group optionally substituted with one or more halogen atoms or groups such as OH, -O-alkyl, -S-alkyl, cyano or
10 alkyl;

R₁₁ and R₁₂ represent, independently of each other, a hydrogen or halogen atom;

R₁₃ represents a halogen atom or a haloalkyl, haloalkoxy, S(O)_qCF₃ or SF₅ group;

15 m, n, q, r represent, independently of each other, an integer equal to 0, 1 or 2;

✱ with the proviso that when R₁ is methyl, then R₃ is haloalkyl, R₄ is NH₂, R₁₁ is Cl, R₁₃ is CF₃ and X is N;

✓ 20 - b) between 0.05 and 10%, preferably between 0.1 and 5% of one (or more) moisture-retaining agents, preferably a moisture-retaining agent of an organic nature; and

✓ 25 - c) between 40 and 99%, preferably between 50 and 98% (and more preferably between 70 and 97%) of vegetable meal.

2. Insecticidal compositions according to

Claim 1, characterized in that the meals are derived from the grinding of cereal grains such as wheat, barley, rye, triticale, oats, or also rice, sorghum, soyabean, maize.

5 3. Insecticidal compositions according to either of Claims 1 and 2, characterized in that the meal is a maize meal.

 4. Insecticidal compositions according to one of Claims 1 to 3, characterized in that among the
10 moisture-retaining agents of an organic nature, there may be mentioned macromolecular hydrophilic derivatives of plant origin, and in particular cellulosic hydrophilic derivatives, and more particularly cellulose.

15 5. Insecticidal compositions according to one of Claims 1 to 4, characterized in that the composition also comprises from 3 to 30%, preferably from 4 to 20% of sugars.

 6. Insecticidal compositions according to
20 one of Claims 1 to 4, characterized in that the sugars are chosen in particular from mono-, oligo- or polyorganosaccharides, especially from sucrose, lactose, fructose, dextrose, glucose or alternatively molasses or honey.

25 7. Insecticidal compositions according to one of Claims 1 to 6, characterized in that they also comprise a preservative preventing the degradation of

the meals, chosen from sodium benzoate, 1,2-benziso-thiazolin-3-one, benzoic acid, para-hydroxybenzoic acid and its ester derivatives and its alkali or alkaline-earth metal salts, in particular the sodium salt,
5 2-phenylphenol and its alkali or alkaline-earth metal salts, in particular the sodium salt, para-nitrophenol.

8. Insecticidal compositions according to one of Claims 1 to 7, characterized in that they comprise other additives such as colourings or
10 attractants for pests or repellants for birds or animals which are useful or which should be protected, and/or other formulation additives such as binding, agglomerating, appetite-enhancing, agglutinating, gelling, swelling and antiadherent agents and the like.

15 9. Insecticidal compositions according to one of Claims 1 to 8, characterized in that the compound of formula (I) is 5-amino-3-cyano-1-[2,6-dichloro-4-(trifluoromethyl)phenyl]-4-[(trifluoromethyl)-sulphinyl]-1H-pyrazole.

20 10. Insecticidal compositions according to one of Claims 1 to 9, characterized in that the formulations according to the invention are in the form of granules, the size of these granules being advantageously between 0.1 mm and 3 cm, preferably
25 between 0.5 and 4 mm and in that these granules are advantageously insoluble in water.

11. Method of controlling insects,

characterized in that an effective quantity of a composition according to one of Claims 1 to 10 in the form of granules having a size of between 0.2 mm and 2 cm is applied over or into the soil (preferably into the soil) of the area which has to be cultivated.

12. Method of protecting crops according to Claim 11, characterized in that a compound of formula I is used.

13. Method according to either of Claims 11 and 12, characterized in that cereal, preferably maize or beet or sunflower or potato or rape, crops are protected.

14. Method according to one of Claims 11 to 13, characterized in that an effective quantity of one of the compositions according to the invention is used for controlling insects, especially click beetles.

15. Method according to one of Claims 12 to 14, characterized in that the effective quantity of composition corresponds to a dose of compound of formula (I) of between 1 and 50 g/ha, preferably between 3 and 40 g/ha.

16. Method of controlling insects which consists in the application, over or into the soil, of a composition providing a dose which is nonlethal through contact but lethal through ingestion.

17. Method according to Claim 16, applicable to click beetles.